Remarks

This paper is responsive to the Office Action mailed May 26, 2005 in connection with the above-identified patent application. In that Action, the Examiner has once again reasserted U.S. Patent No. 5,315,709 to Alston, Jr., et al. as an anticipatory reference under 35 U.S.C. § 102(b) with regard to all of the claims pending in the instant application (claims 1-28).

A. The Present Application:

The system of the present application provides a mechanism which enables users to determine the lineage of warehouse data by traversing a transformation model. The subject system provides users with a tree structure that represents the data the users wish to view. The system allows users to select any data that they want to access which can be anywhere on the tree. If the users have questions about how the data they are looking at was derived, the users navigate the information catalog via the tree structure to see any "transformations" that were applied to generate the data. From this point, the users can continue with their data analysis or continue to follow the lineage by looking at the metadata about the source data. The present system enables users to drill from the target warehouse data back to the original source data and learn how the target warehouse data was derived.

Accordingly, the present system is especially advantageous in that it is used to describe a process applied to data. More particularly, the present system describes to users querying the system the transformation of data as it moves in a data warehouse. Moreover, the system defines the lineage of data. That is, the system indicates to the user what the sources for the warehouse were and/or the modification(s) that resulted in the current state of the data and enables the user to navigate the data.

B. U.S. Patent No. 5,315,709 to Alston, Jr., et al.:

The Alston patent teaches a system and apparatus for simply transforming objects in a first data model (source design objects) to objects in a second data model (target design objects) and synchronizing the two data models.

In the preferred embodiment described, the first data model is an extended entity model and the second data model is a relational data model. In the Alston patent, the objects in the first and second data models are the same data, merely transformed. Further in Alston, the only action described with regard to the source design objects and target design objects is a synchronizing process for use between the two data models.

The method and apparatus taught in the Alston patent is not at all concerned with providing users with information about source data from which target data objects were derived via a transformation performed on the source data to derive the target data object. Rather, the system taught in Alston is concerned with synchronizing a pair of different data models. Figure 1C shows a simplified view of the separate and distinct nature of the first and second data models 52, 62 in separate first and second design spaces 50, 60, respectively. In the system taught there, upon the establishment of a user of a data model in one design space, it may be desirable to establish a data model in another design space which corresponds to the same information. The system addresses the event when user interaction with one or both of the data models occurs which modifies one of the respective data models so that the data models are no longer in correspondence with a common information set. In those circumstances, it is desirable to transform or translate a resultant model in its space to the other model in the other space. This process is referred to as "engineering" in the Alston patent.

It is to be noted that the user's modification to the objects in the first data model are not stored or otherwise made a part of a lineage information relating to the data. In Alston information on the modifications is lost and only the modified object itself is saved for use in the first data model and for use in synchronizing the objects in the second data model to conform with the modified object(s) in the first data model. Also, in Alston, the synchronizing of the objects in the second data model based on modification of objects in the first data model does not result in any information on the modification available for presentation to the user. When objects in the first data model are modified, the objects in the second data model are "synchronized" and thus changed/transformed, but no information on the transformation itself is made available to the user.

As described in the Alston patent beginning at column 9, line 45, it is a design goal to generate, modify, and maintain parallel data models in each of two design spaces, for example, an Analyst design in the first design space and a DB2 design in the second design space, where the two designs correspond to the same data, or information in a synchronized manner. To maintain flexibility for the user, the system of Alston permits modifications of the two designs by allowing a user to independently modify one or both of the designs during predetermined time intervals, and then following each such interval, synchronize the resultant divergent designs, so that they again correspond to the same data.

Thus, the method and system taught in Alston does not provide information about source data from which target data objects were derived via a transformation performed on the source data. Rather, the system simply coordinates or "synchronizes" parallel data models in each of two design spaces. Information on "generations" of modified data or on the synchronizing transformation is not saved or otherwise made available to the user.

In addition to the above, the data models are separate and distinct and reside in two separate design spaces in Alston. The Alston disclosure does not teach or suggest navigating a plurality of data objects stored in an information catalog.

All Claims are in Condition for Allowance:

Referring to the Office Action in greater detail, all pending claims were rejected as being anticipated by the Alston patent. More particularly, the Examiner, as in the previous Office Action, and particularly in reference to independent claims 1, 7, 13, 19, and 27-28, continues to take the position in the record that "Alston discloses a computer system with means/methods/computer program product to perform the functions as claimed by applicant comprising:

a) a computer having a memory, and a data storage device coupled thereto that stores data;

b) one or more computer programs, performed by the computer, for, in response to receiving user input, selecting a target object in an information

catalog and providing information about a source data from which the target object was derived via a transformation performed on contents of the source data;

c) a plurality of objects including a target object wherein the target object was derived from one or more transformations of one or more sources of data;

d) a transformation lineage system which stores transformation lineage information for the target object, the transformation lineage information associating the target object with the one or more transformations and identifying the one or more data sources;

e) a user interface for receiving user input for selecting one of the plurality of objects; wherein, the user interface configure (sic) to display the transformation lineage information in response to receiving user selected input."

The Examiner, in a "Response to Arguments" section of the Action took the position that Alston clearly discloses a graphical user interface that allows users to navigate and transform objects in a first data model to objects in a second data model.

With regard to this position, applicant respectfully submits that although Alston discloses a graphic user interface and the transformation of objects in a first data model to objects in a second data model, it falls short of receiving input from a user navigating data objects stored in an information catalog selecting a target data object in the information catalog and providing information about source data from which the target data object was derived via a transformation performed on the source data to derive the target data object. Rather, the system taught in Alston is a "moving forward" system wherein objects are transformed from a first data model to a second data model and, upon changes to objects in the first data model, corresponding changes or "synchronization" modifications are made to objects in the second data model. The Alston system does not permit providing information about source data from which a selected target data object was derived via a transformation performed on the source data.

Next, it is respectfully submitted that the Examiner misunderstood applicant's argument made in the previous paper with regard to the differences

between "navigating" data and "synchronizing" data. The Examiner now states in the record that she did not assert or imply that navigating data is the same as synchronizing data. Applicant now agrees with this position. Navigating data is not the same as synchronizing data. To that end, it is to be pointed out that the independent claims in the pending application relate to navigating data and not synchronizing data. The recited limitation clearly is directed to a user navigating data. The Alston patent, in contrast, teaches a synchronizing of data.

Lastly in the Action, the Examiner alleged that applicant's argument relies upon features not recited in the claims. However, as an example, independent claim 1 recites a method of navigating data stored on a data storage device comprising selecting a target data object in an information catalog and providing information about source data from which the target data object was derived via a transformation performed on the source data to derive the target data object. The target data object is selected in response to receiving input from a user navigating a plurality of data objects stored in the information catalog. Applicant relies upon the recitations contained in the independent claims pending in this application.

The Examiner previously asserted that Alston discloses the transformation of the source data to derive the target object via keys, citing col. 17, line 45 – col. 18, line 20, and Fig. 6. The Examiner further asserted that the split screen provides information about source (152 in Fig. 6) from which a target object (154 in Fig. 6) was derived.

Applicants respectfully traverse the Examiner's position regarding the teachings of Alston. The Examiner has perhaps misunderstood and, therefore, misinterpreted Fig. 6 and the cited columns of Alston. Brief overviews of the embodiments described by Alston and the present application are in order here to clarify the novel features claimed by applicants.

The Abstract of Alston simply describes synchronization of two data models i.e., source design objects and target design objects. However, the target and design models (52 and 62 in Fig. 1B and 1C, col. 8, lines 26-34) are not collections of data from the DB2 database 46 but, rather definitions of different views of the data objects in the database 46. To clarify this further, quoting from

col. 1, lines 23-31, "The implementation of an information management system utilizing database management technology involves the concept of dual data representation: i.e., logical representation; and physical representation. Logical representation relates to the form in which the data records are presented to and interact with the system user. Physical representation relates to the form in which individual data records are stored and how the records are manipulated by the computer system." Alston only discloses one source for data objects, namely the DB2 catalog 46 which is viewed differently by different users, e.g., an Entity-Relationship (E-R) type of data model versus a relational model where the objects are represented by tables and associated columns (col. 1, line 65 – col. 2, line 8).

The transformations disclosed in Alston relate to design object transformations (Abstract), rather than target data transformations as described in the present application. For example, Alston describes a first data model as an extended entity data model and a second data model as a relational data model, and the objects being transformed are design objects, not data objects (col. 4, lines 28-40). The data models are used to interact with the database 46 via the SQL file 16 (col. 7, line 64 – col. 8, line 6).

With regard to synchronization, Alston teaches synchronization of the data models in the design spaces 50 and 60 (col. 9, lines 58-68), but is silent with regard to synchronization of target data because there is only one source for target data, namely the database 46, and no synchronization is needed.

With reference to Fig. 6 of Alston, the Examiner cited this as an example of transformation of source data, however, Alston is only describing processing the relationship between entities as objects (col. 17, lines 45-47), and there is no suggestion of navigating data targets in the DB2 database 46. Nor is there any suggestion in Alston that the data in the database is transformed; only the design by which the data is accessed is transformed, either from an extended entity model to a relational model (forward engineering), or vice versa (reverse engineering), as defined in col. 2, lines 17-28.

As opposed to Alston, however, the present application allows a user to access data derived from any number of database sources on one or more data processing nodes (page 5, lines 26-29). The information catalog system permits

users to find what data is available in their environment, and to organize the data in the information catalog system, and to access the data itself when needed (page 5, lines 19-25). Because the information catalog system enables users to determine what information should be captured as warehouse data, what it is called, and how it is organized, a transformation lineage model is provided as a mechanism to advantageously enable a user to determine the lineage of the warehouse data by traversing a transformation model. The system allows users to select any data that they want to access, which can be anywhere on a tree. If the users have questions about how the data they are looking at was derived, the users can navigate the information catalog via the tree structure to see any "transformations" that were applied to generate the data. Alston does not teach any such transformations of data, but rather, only the transformation of one design model to another which is unrelated to target data transformations. A user may access the data in the database 46 of Alston by either of the disclosed design models, but there is no suggestion or teaching that the data itself is transformed, let alone a teaching that the user may view information about how the data was transformed.

In addition to the above, the system in Alston is not responsive to input from users navigating a plurality of objects to provide information about source data from which the selected target data object was derived. Rather, simply, the system of Alston synchronizes parallel data models in each of two design spaces and merely enables the user to view the relationships between the design objects in different design spaces. This is set out in Alston at column 11, beginning at line 22. To that end, Alston simply provides maps in association with the objects in the source and design spaces. The maps serve to enable users to drive the forward or reverse engineering, to view the relationships between the design objects in the different design spaces, and to synchronize the two data models. However, Alston falls short of providing information about the source data from which the selected target data object was derived via a transformation. The system of Alston simply enables user to view the relationship between design objects and different design spaces. The objects are simply set out in a side-by-side display such as shown in Figure 3A. No information about the source data is displayed, only that source data exists.

In addition to the above, the system of Alston does not at all provide transformation information which is information about the transformation performed on the source data to derive the target data. This is clearly recited in claims 3, 9, 15, 22, and 26.

For at least the above reasons, and particularly because the subject independent claims clearly include the limitation of navigating data and providing information about source data from which target data was derived via a transformation, it is respectfully submitted that the Alston, Jr. '709 patent does not teach, suggest, or fairly disclose the invention recited in the pending claims. A withdrawal of the rejection of those claims over this prior art patent is respectfully requested.

Conclusion

For at least the above reasons, applicant respectfully submits that all pending claims are patentably distinct and unobvious over the reference of record.

Allowance of all pending claims and early notice to that effect is respectfully requested.

Respectfully submitted,

FAY, SHARPE, FAGAN,
MINNICH, & McKEE, LLP

26AUG05
Date

Michael E. Hudzinski,
Reg. No. 34,185
1100 Superior Avenue
Seventh Floor
Cleveland, Ohio 44114-2518
(216) 861-5582

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